



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Principles of Electron Microscopy and Applications to Nanomaterials Research

2122-79R-M7

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#### Title

Principles of Electron Microscopy and Applications to Nanomaterials Research

#### Teacher(s)

Dr. Giovanni Maria Vanacore, University of Milano-Bicocca

#### Language

English

#### Short description

- Introduction to electron optics: wave-nature of electrons; electron-matter interaction; basic layout of a microscope.
- Transmission Electron Microscopy (TEM): imaging modes (bright and dark field), diffraction and crystallography; amplitude and phase contrasts in TEM; advanced modes of operation: High-Resolution TEM, magnetic TEM, Scanning TEM, and EELS.
- Scanning Electron Microscopy (SEM): layout of a SEM microscope; secondary electron contrast and imaging modes; Electron Back-Scatter Diffraction (EBSD).

- TEM/SEM investigation of nanomaterials for electronic, photonic and phononic applications.

### **CFU / Hours**

1 CFU, 8 hours

### **Teaching period**

Winter 2022:

February 21, 23, 25, 28 (14.30-16.30).

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